Name_____

Algebra 2
Lesson 1-6
Probability

We deal with chance or probability in many events. It is used to determine outcomes in gambling, weather prediction, genetic outcomes, car insurance rates, and the risk involved with various types of substances and behaviors. When we study the probability that a harmful event will occur, it is called risk.

Experimental probability: involves gathering data from observations; the data gather from observations is called an experiment or trial. Experimental probability is written as:

$$P(event) = \frac{number\ of\ times\ the\ event\ occurs}{number\ of\ trials}$$

Example: A die is rolled 8 times. The following are the numbers that were rolled:

1, 3, 3, 3, 6, 1, 2, 2.

What is the number of times a 1 was rolled? What is the number of trials? _____

2 ? 3? 4?

5? 6?

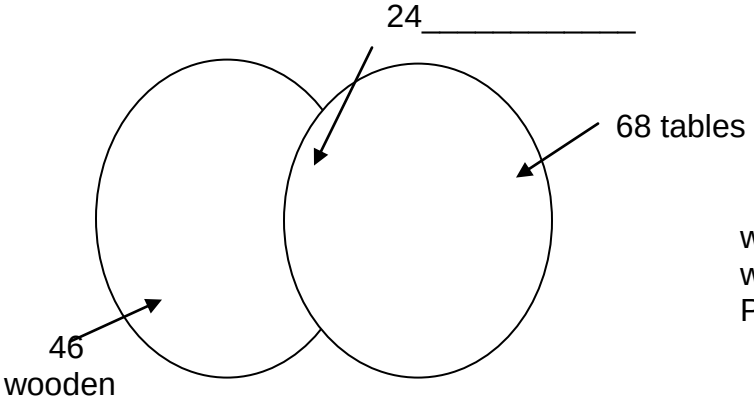
What is the probability that a 2 was rolled? 5? 4?

Theoretical probability looks at the number of ways an event can occur. **Not** what happens when you gather data from observations , but what *could* happen. So the ratio used to describe theoretical probability looks at the **sample space** (possible outcomes) and a selected event, A. So:

$$P(A) = \frac{m\ number\ of\ ways\ event\ can\ occur}{sample\ space}$$

Example: What is the probability, P(A), of pulling out an ace from a deck of cards? How many aces are there in a deck of cards? (m outcomes)
How many cards total are there in a deck of cards? (sample space)
P(A)=

Venn diagrams are often used to show mathematical relationships between sets or groups of things. For example, in a two-set Venn diagram, one circle may represent the group of all wooden objects, while another circle may represent the set of all tables. The overlapping area (*intersection*) would then represent the set of all wooden tables.



What is the total number of objects?
How many wooden tables are there?

If an item were randomly pulled from the warehouse, what is the probability that it would be a wooden table?
P(wooden table)=

Name_____

Algebra 2
Problem Set 1-6
Probability

1. An experiment consists of spinning a spinner. Use the results in the table to find the experimental probability of each event.

outcome	frequency
Red	7
Blue	8
green	5

a) Spinner lands on blue

b) Spinner **does not** land on green

2. A manufacturer inspects 800 calculators and finds that 796 of them have no defects.

a) What is the ex. probability that a calculator chosen at random has **no** defects?

b) The manufacturer sent out a shipment of 2400 calculators to a retail store. Predict the number of light bulbs in the shipment that are likely to have **no** defects.

3. One game of bowling consists of ten frames. Laura usually rolls 3 strikes in each game. What is the ex. probability that Laura will roll a strike on any frame?

4. An experiment consists of rolling a die. Find the theoretical probability of each outcome.

a) rolling a 3

b) rolling a number greater than 3

c) rolling a multiple of 3

5. A spinner is green, red, and blue. The probability the spinner lands on green is 15%, the prob. that the spinner lands on red is 35%. What is the probability of landing on blue?

6. An experiment consists of randomly choosing a marble from a bag. What is the ex. probability of each event?

Outcome	Frequency
Red	4
Blue	6
Green	6
Yellow	9

a) Choosing a yellow marble

b) Choosing a blue marble

c) Not choosing a green marble

7. In a standard deck of cards there are 4 suites with 13 cards per suite. Ricardo randomly drew cards from the deck. Results are below.

outcome	Frequency
Hearts	7
Diamonds	7
Clubs	8
spades	6

a) What is the exp. probability of drawing a club?

b) Theoretical probability?

c) What is the exp. probability of drawing a black suit?

d)Theoretical probability?